

I. INTRODUCTION

The Big River (Figure 1, Appendix A) is located in east-central Missouri and originates in northern Iron County. It flows 138 miles northward to its confluence with the Meramec River near Eureka, Missouri. Its watershed drains 955 square miles of the upper Mississippi River Basin in portions of six Missouri counties. Past mining activities have impacted the Big River watershed with lead, cadmium, and zinc. The focus of this study encompasses the Big River Watershed and its tributaries, as well as several communities in St. Francois, Washington and Jefferson Counties. The final Integrated Feasibility Study will serve as guidance on the most efficient ways to mitigate risk from heavy metal contamination in the floodplain and stream sediment while taking into account the interest of all stakeholders.

A. STUDY AUTHORIZATION

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) component of this joint study is being undertaken as part of the Big River Mine Tailings Superfund Site, The Washington County Lead District Superfund Site, and the Southwest Jefferson County Superfund Site.

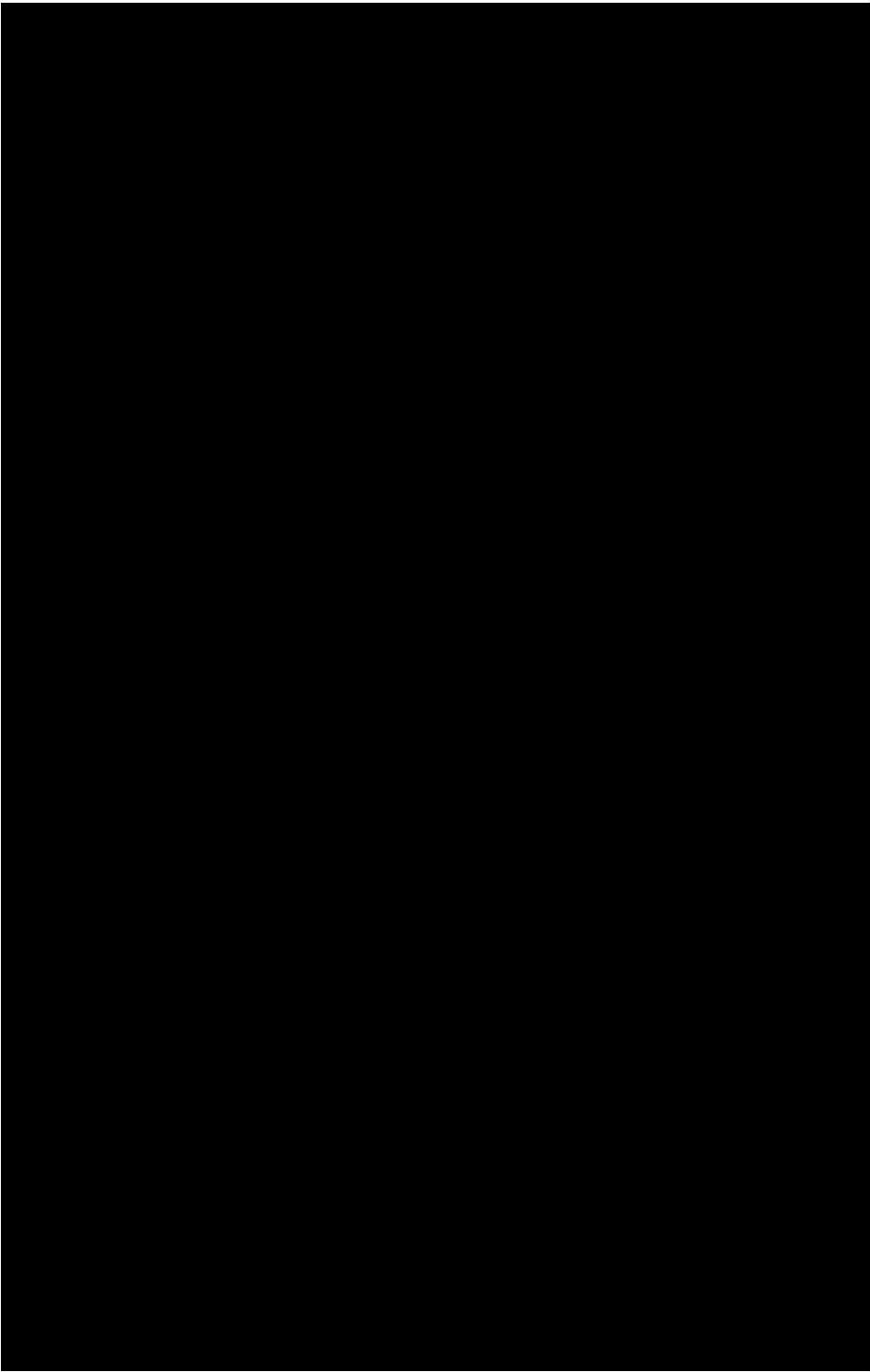
Congress enacted CERCLA, also known as Superfund, on December 11, 1980. This provided broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. CERCLA established prohibitions and requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified.

If a site is listed on the National Priorities List (NPL), pursuant to the NCP, a Remedial Investigation/Feasibility Study (RI/FS) is performed at the site. The RI serves as the mechanism for collecting data to: characterize site conditions; determine the nature of the waste; assess risk to human health and the environment; and conduct treatability testing to evaluate the potential performance and cost of the treatment technologies that are being considered.

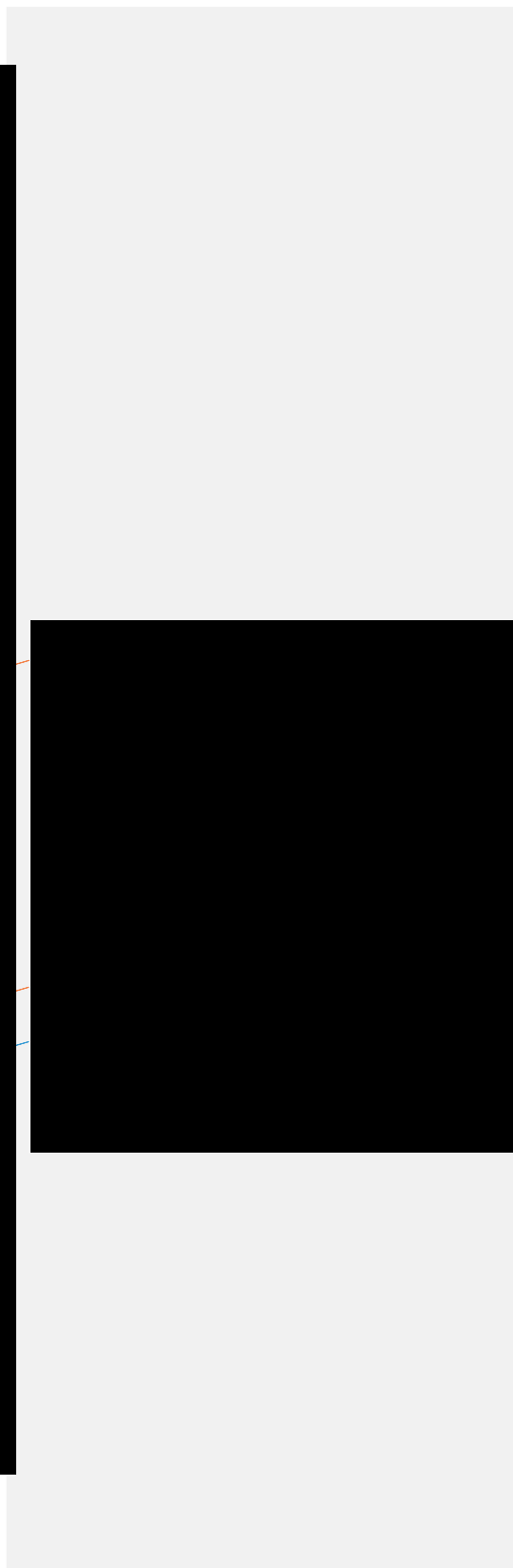
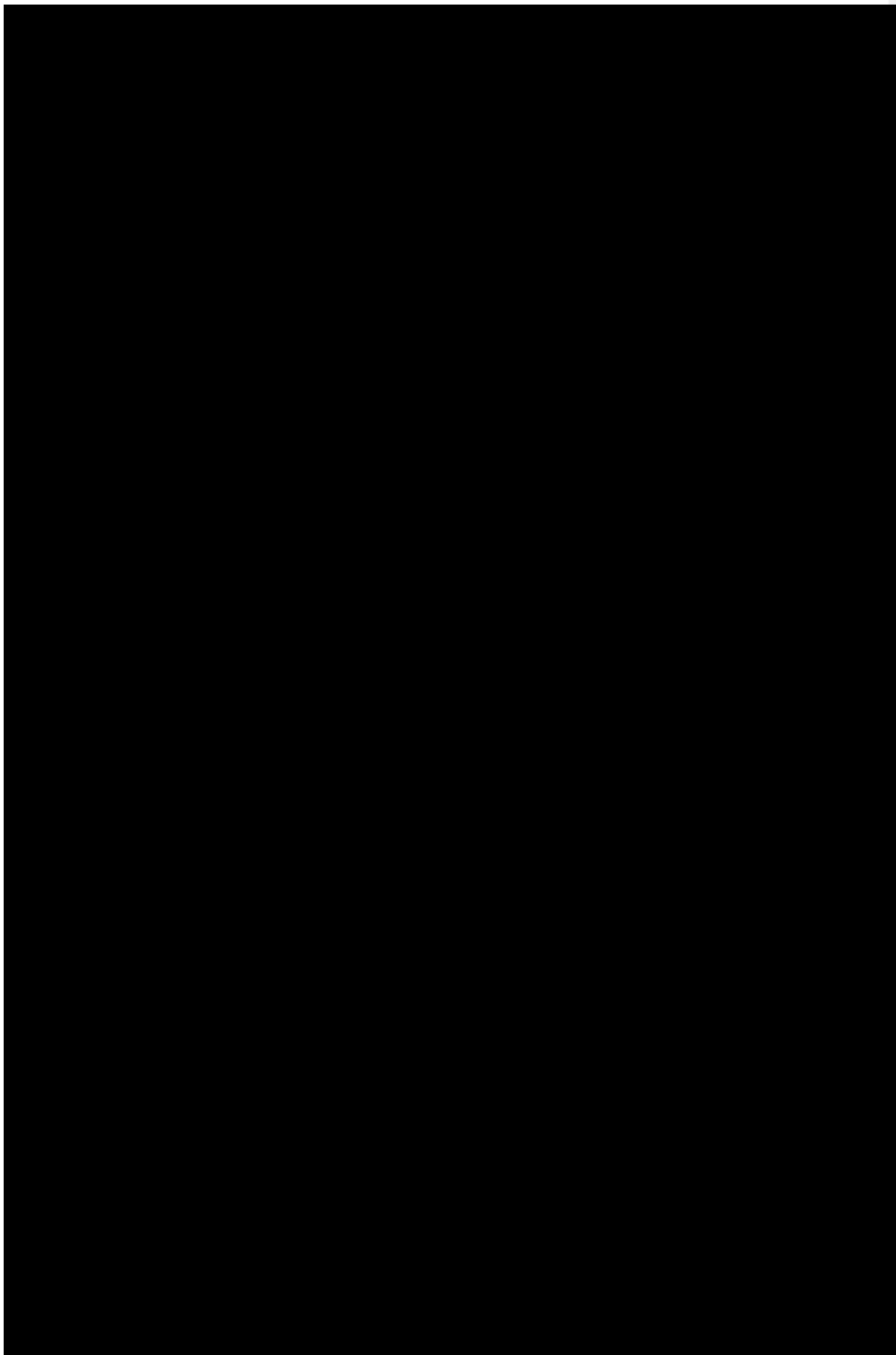
The FS is the mechanism for the development, screening, and detailed evaluation of alternative remedial actions. The RI and FS are conducted concurrently - data collected in the RI influence the development of remedial alternatives in the FS, which in turn affect the data needs and scope of treatability studies and additional field investigations. This phased approach encourages the continual scoping of the site characterization effort, which minimizes the collection of unnecessary data and maximizes data quality.

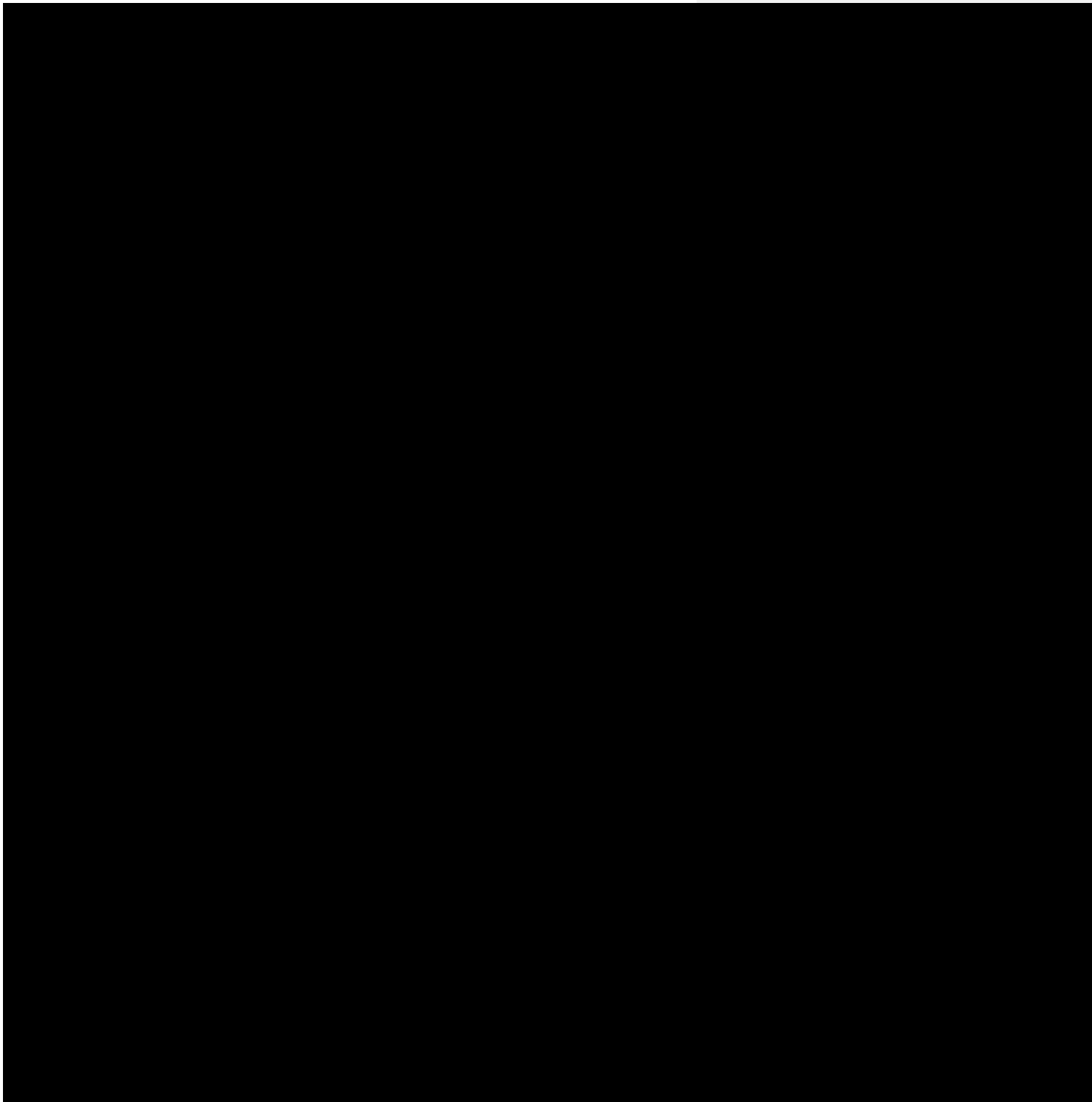
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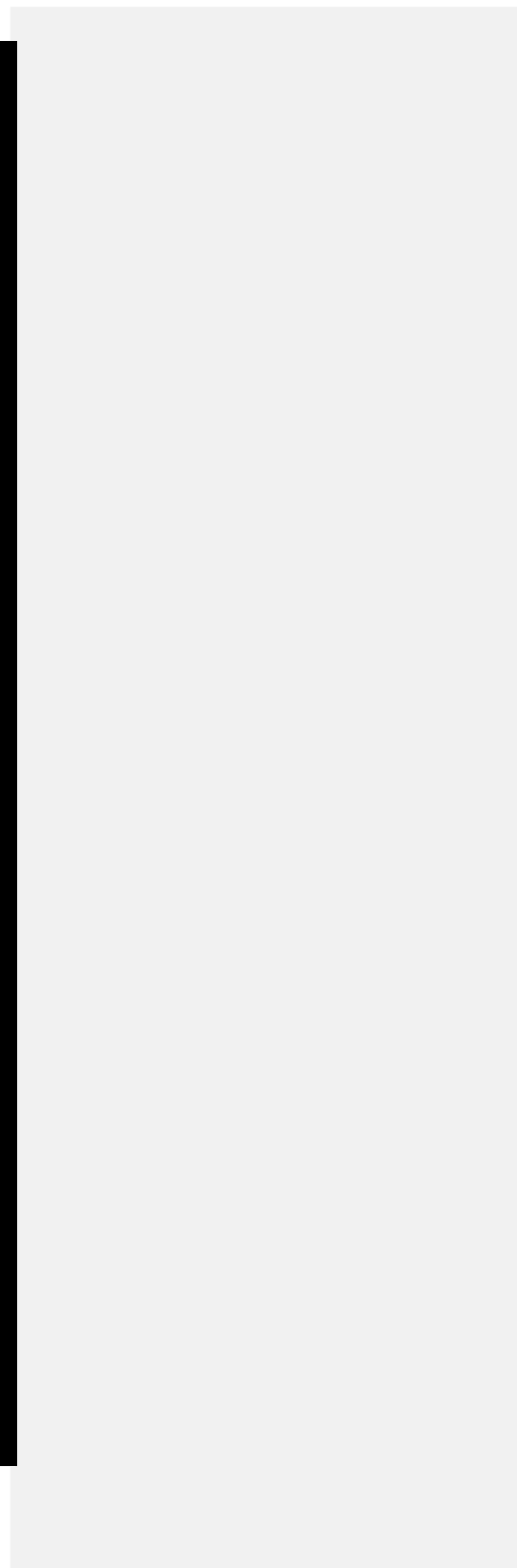
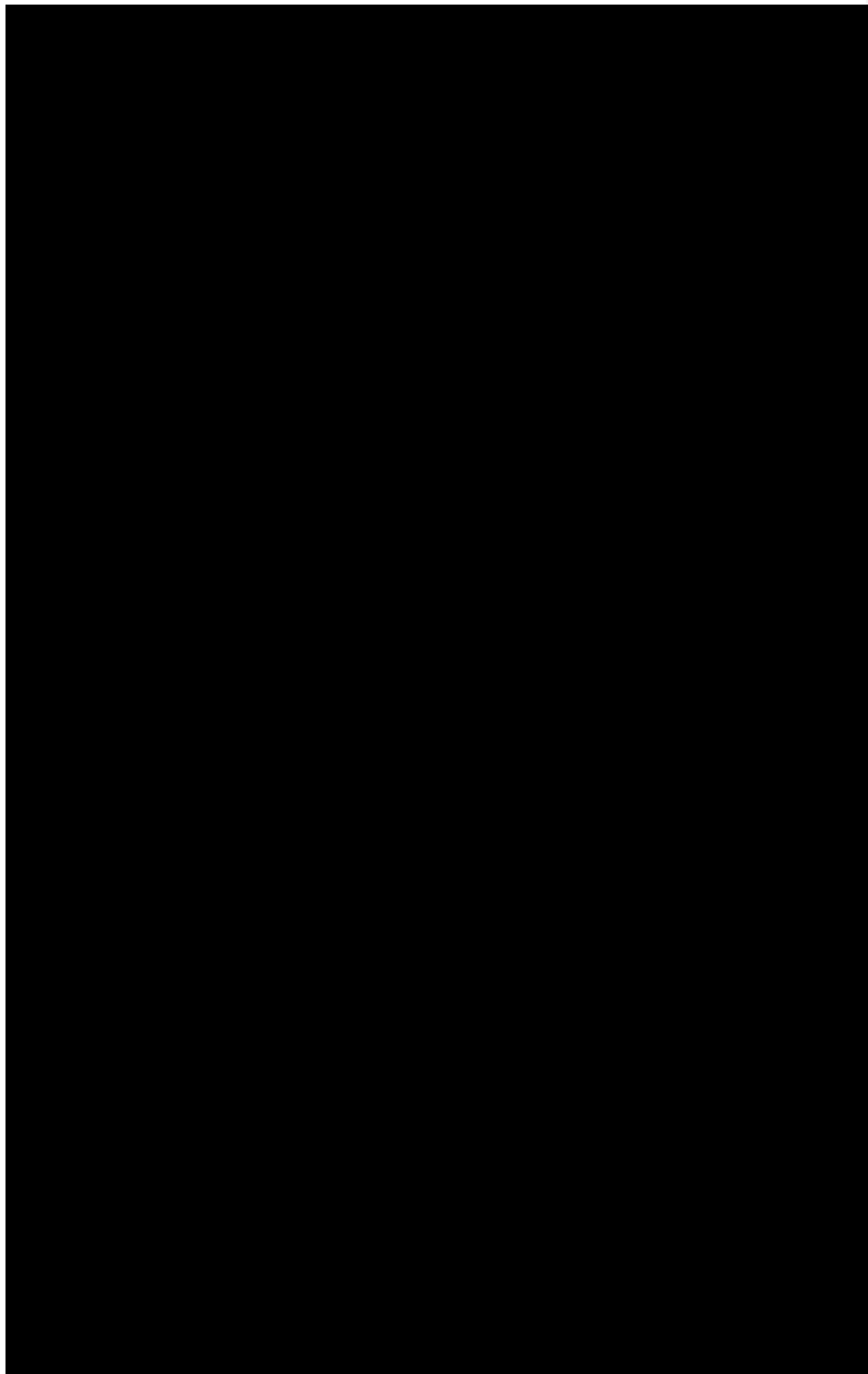
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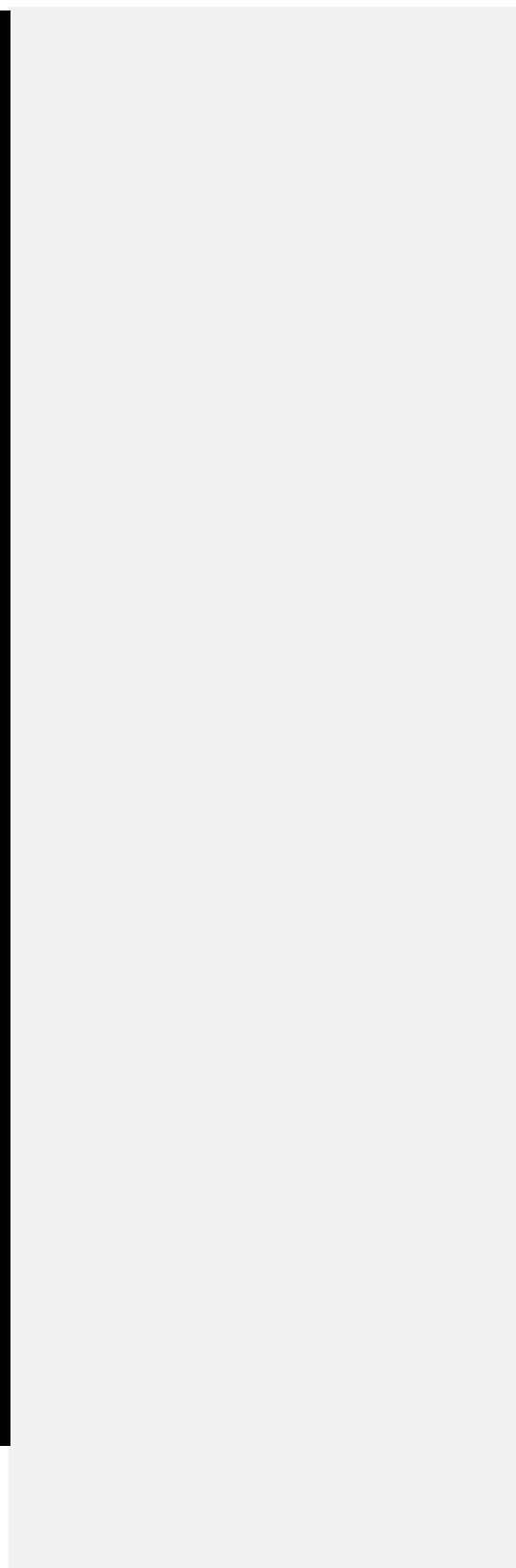
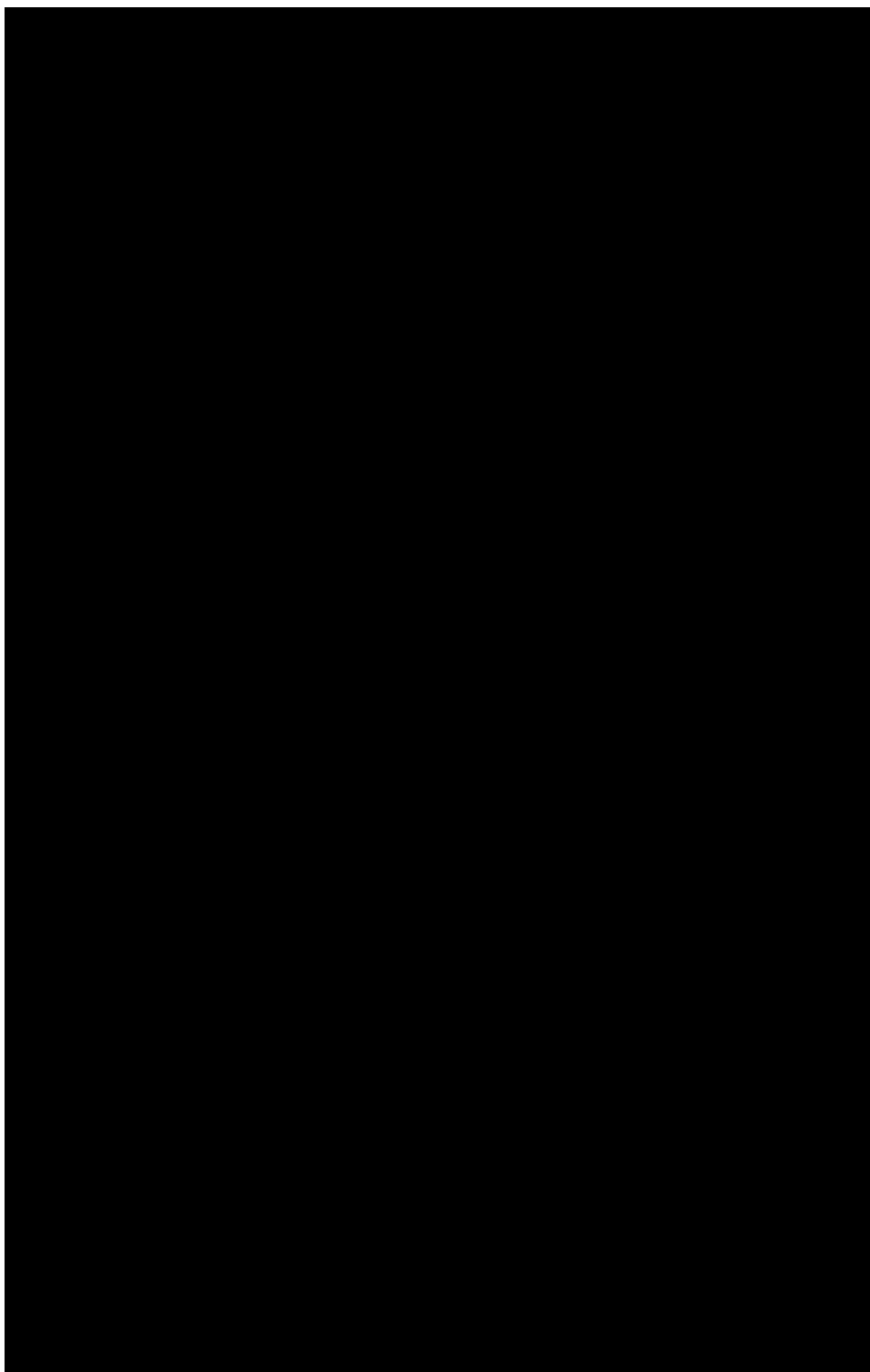


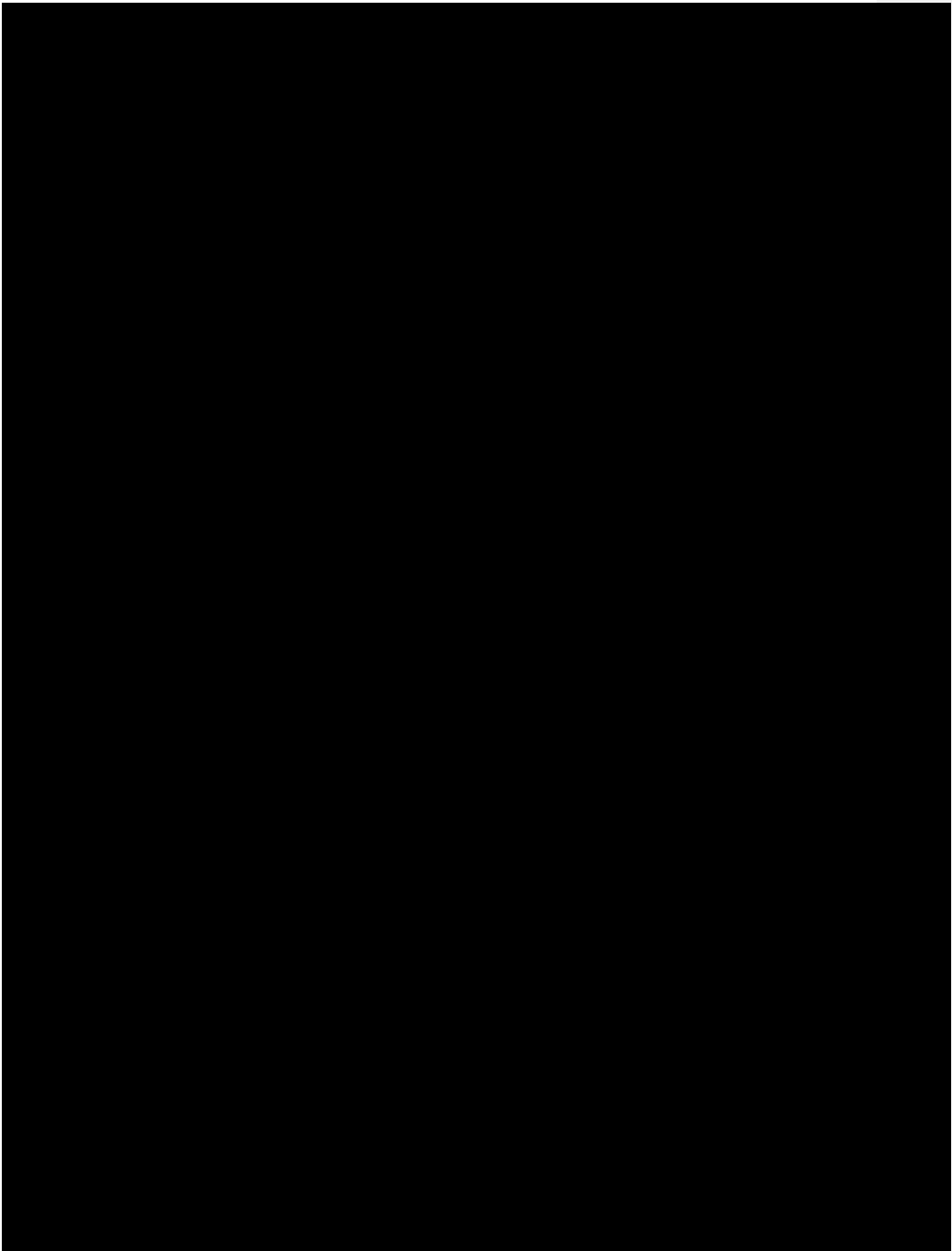
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G. POTENTIAL TREATABILITY STUDIES

This section combines the potential remedial technologies identified in the previous section with the existing issues in the Big River watershed. This step is crucial for the purpose of obtaining a manageable subset of technically feasible and generally applicable process options from the larger universe of identified technologies. During this step, process options that have a possibility of being implemented, due to technical or economic feasibility, are paired with high priority areas, thereby streamlining subsequent technology evaluations.

The following criteria are used to evaluate the technical feasibility and general applicability of process options during the initial screening step:

- Applicability of the process option to the site-specific conditions
- Applicability of the process option for addressing the COCs
- Effectiveness of the process option in addressing the COCs.

To simplify, each area of concern is listed. Additional screening will occur during the development of the FS to evaluate which technologies will be used.

G1. High Priority Areas in St. Francois County

Since St. Francois County is considered the primary source of the majority of contamination in Big River, there are many areas to be considered a priority. This section focuses on the Big River starting at Irondale and moving down to the confluence with Mineral Fork. Additionally, Flat River will also be discussed, specifically from upstream of Elvins to the confluence with Big River.

- Big River
 - Big River below the confluence with Eaton Creek. This is the primary drainage coming from the Leadwood Pile. Although Leadwood is stabilized, possible runoff could occur from floodplain contamination between the pile and the Big River. There is a potential trap area at the Leadwood Access. This access is located downstream of Eaton Creek and is still intact.
 - Big River between Leadwood and Desloge. This area will be assessed moving down to the next source area, the Desloge Pile.
 - Big River at the Desloge Pile. This is the area where EPA and USFWS conducted a Pilot Study to assess the effectiveness of using a low-water crossing (Bonehole Access) as a sediment trap. EPA removed approximately 750 cubic yards of sediment upstream of the low-water crossing and placed the material on the Desloge Repository. USFWS then surveyed the area and monitored after high water events. A gravel bar was also removed approximately ¼ mile downstream and it was evaluated as well. This could be an appropriate area to revisit.
 - Big River at the mouth of Flat River. This is a depositional area where EPA has found elevated levels of COCs. It could possibly be used to trap contaminated sediment.
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- Big River at Turkey Creek Confluence (just downstream of Bonne Terre). This is the last major source into Big River coming from St. Francois County.
- Big River at St. Francois State Park. This is a major depositional area. It is highly accessible and is most likely one of the most visited areas on Big River.
- Big River below Mill Creek. This is a major depositional area. Access could be an issue.
- Big River Floodplain. Landowners will be approached at areas of high erosion, sparse riparian, etc., to discuss potential pilot projects to enhance riparian, stabilize banks, remove sediment, etc. EPA has compiled a list of landowners for each parcel.
- Railroads. All railroads in St. Francois County are made from mine waste. These will be assessed by the PRP.
- Flat River
 - Flat River at the confluence with the Elvins Mine Tailings Site. The priority for this area is to make sure there is no additional contamination moving from the Elvin's floodplain into Flat River.
 - Flat River at the mouth of Shaw Branch (discharge from the Federal Tailings Pile). The PRP is planning to excavate the sediment in Shaw Branch down to native material. However, additional work may be required if the settling basins in Shaw Branch are not performing to standards.
 - Flat River Floodplain. Landowners will be approached at areas of high erosion, sparse riparian, etc., to discuss potential pilot projects to enhance riparian, stabilize banks, remove sediment, etc. EPA has compiled a list of landowners for each parcel.